

Animal and Plant Health Inspection Service, USDA

§ 305.23

Origin	Shape of mango <sup>1</sup>	Weight (grams)	Dip time <sup>2</sup> (minutes)
Puerto Rico, U.S. Virgin Islands, or West Indies (excluding Aruba, Bonaire, Curacao, Margarita, Tortuga, or Trinidad and Tobago).	Flat, elongated varieties .....	Up to 400 .....	65
		400–570 .....	75
	Rounded varieties .....	Up to 500 .....	75
		500–700 .....	90
Central America (north of and including Costa Rica) or Mexico.	Flat, elongated varieties .....	701–900 .....	110
		Up to 375 .....	65
	Rounded varieties .....	375–570 .....	75
		Up to 500 .....	75
Panama, South America, or West Indies islands of Aruba, Bonaire, Curacao, Margarita, Tortuga, or Trinidad and Tobago.	Flat, elongated varieties .....	500–700 .....	90
		701–900 .....	110
	Rounded varieties .....	Up to 375 .....	65
		375–570 .....	75
		Up to 425 .....	75
		425–650 .....	90

<sup>1</sup> Flat, elongated varieties include Frances, Carrot, Zill, Ataulfo, Carabao, Irwin, and Manila, and rounded varieties include Tommy Atkins, Kent, Hayden, and Keitt.

<sup>2</sup> See paragraph (g)(2) of this section for required dip times if the fruit is hydrocooled within 30 minutes of removal from the hot water immersion tank.

(2) Dip times in paragraph (g)(1) of this section are valid if the fruit is not hydrocooled within 30 minutes of removal from the hot water immersion tank. If hydrocooling starts immediately after the hot water immersion treatment, then the original dip time must be extended for an additional 10 minutes. Hydrocooling is optional but may be done only at temperatures of 70 °F or above.

**§305.22 Hot water immersion treatment schedules.**

(a) *T102-d*. (1) Fruit must be grown and treated in Hawaii.

(2) Fruit must be submerged at least 4 inches below the water's surface in a hot water immersion treatment tank certified by APHIS.

(3) The fruit must be submerged for 20 minutes after the water temperature reaches at least 120.2 °F in all locations of the tank. The water must circulate continually and be kept at 120.2 °F or above for the duration of the treatment. Temperatures exceeding 121.1 °F can cause phytotoxic damage.

(4) Hydrocooling for 20 minutes at 75.2 °F is recommended to prevent injury to the fruit from the hot water immersion treatment.

(b) *T102-d-1*. (1) Fruit must be at ambient temperature before treatment begins.

(2) Fruit must be submerged at least 4 inches below the water's surface in a hot water immersion treatment tank certified by APHIS.

(3) The fruit must be submerged for 20 minutes after the water temperature reaches at least 120.2 °F in all locations of the tank. The water must circulate continually and be kept at 120.2 °F or above for the duration of the treatment. Temperatures exceeding 121.1 °F can cause phytotoxic damage.

(4) Hydrocooling for 20 minutes at 75.2 °F is recommended to prevent injury to the fruit from the hot water immersion treatment.

(c) *T102-e*. (1) Fruit must be submerged at least 4 inches below the water's surface in a hot water immersion treatment tank certified by APHIS.

(2) Water must circulate continually and be kept at 120.2 °F or above for 20 minutes. Treatment time begins when the water temperature reaches at least 120.2 °F in all locations of the tank. Temperatures exceeding 125.6 °F or treatment times significantly exceeding 20 minutes can cause phytotoxic damage.

(3) Cooling and waxing the fruit are both optional and are the sole responsibility of the processor.

**§305.23 Steam sterilization treatment schedules.**

§ 305.24

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Treatment schedule	Temperature (°F)	Pressure	Exposure period (minutes)	Directions
T303–b–1 .....		10 lbs .....	20	Use 28" vacuum. Steam sterilization is not practical for treatment of bales with a density of greater than 30 pounds per cubic foot.
T303–b–2 .....		10 lbs .....	20	
T303–d–2 .....	260	20 lbs .....	15	Use 25 Prime vacuum. Steam at NAP, tarpaulin or tent. For treatment enclosures of 4,000 ft <sup>3</sup> or less, the minimum air temperature must be 40 °F. For treatment enclosures greater than 4,000 ft <sup>3</sup> and less than or equal to 6,000 ft <sup>3</sup> , the minimum air temperature must be 60 °F. Treatment is not recommended for treatment enclosures greater than 6,000 ft <sup>3</sup> .
T309–c .....	250	15 lbs .....	20	
T406–d .....	240	10 psi .....	20	
	140	NAP <sup>1</sup> .....	60	
T408–b .....	250	15 psi .....	30	Preheat laboratory autoclaves. Restrict soil depth to 2 inches when treating quantities of soil in trays. Restrict each package weight to 5 pounds or less when treating individual packages. Load with adequate spacing. Large commercial steam facilities that operate at pressures up to 60 pounds psi will permit treatment of greater soil depth.
T503–1–3 or T503–2–3 (nonbaled).	240	NAP .....	10	Introduce live steam into a closed chamber containing the material to be treated until the required temperature and pressure are indicated. The temperature/pressure relationship must be maintained at or above this point for the required exposure period. No initial vacuum is needed, but air must be released until steam escapes.
T503–1–3 or T503–2–3 (baled).	240	10 lbs .....	20	
T504–1–2, T504–2–2 .....	242	10 lbs .....	20	
T506–2–3 Loose masses of material.		20 lbs .....	10	
		15 lbs .....	15	
		10 lbs .....	20	
T506–2–3 Closely packed material (such as soil).				Exhaust the air in the chamber to a high vacuum, and then introduce live steam until the required positive pressure is reached.
T510–1 .....	212			Live steam from jet of nozzle into loose masses of material until all parts reach 212 °F.
T518–2–2 .....	260	20 lbs .....	15	Introduce steam into 28" vacuum.
	250	15 lbs .....	20	
T519–1 .....		10 lbs .....	20	
T519–2 .....	259	20 lbs .....	10	
	240	10 lbs .....	20	Introduce steam into 28" vacuum (or if without initial vacuum, "bleed" air until steam vapor escapes).

<sup>1</sup> Normal atmospheric pressure.

[70 FR 33269, June 7, 2005, as amended at 70 FR 41092, July 15, 2005]

**§ 305.24 Vapor heat treatment schedules.**

(a) *T106–a–1, T106–a–2, T106–a–3, T106–a–4.* (1) The temperature of the fruit pulp must be increased gradually to 110 °F until the center of the fruit reaches that temperature in 8 hours.

(2) The fruit temperature must be held at 110 °F for 6 hours.

(b) *T106–a–1–1.* (1) The temperature of the fruit pulp must be increased to 110 °F until the center of fruit reaches that temperature in 6 hours. During the

first 2 hours, the temperature must be increased rapidly. The increase over the next 4 hours must be gradual.

(2) The fruit temperature must be held at 110 °F for 4 hours.

(c) *T106–b–1, T106–b–2, T106–b–3, T106–b–4, T106–b–5, T106–b–6, T106–b–7, T106–b–8.* The temperature of the article must be increased using saturated water vapor at 112 °F until the approximate center of the fruit reaches 112 °F. The fruit temperature must be held at 112 °F for 8.75 hours; then immediately cooled.